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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,572	07/11/2003	Robert G. Batchko	BAT-102	3542
27652	7590	08/11/2005		EXAMINER
JOSHUA D. ISENBERG				BOUTSIKARIS, LEONIDAS
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FREMONT, CA 94539			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

81

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/617,572	BATCHKO, ROBERT G.
	Examiner	Art Unit
	Leo Boutsikaris	2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on 20 July 2005.  
 2a) This action is **FINAL**.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-41 is/are pending in the application.  
 4a) Of the above claim(s) 19,20,25 and 26 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-18,21-24,27-29,35-37,40 and 41 is/are rejected.  
 7) Claim(s) 30-34,38 and 39 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 05 February 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 7/20/05

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

Applicant's election with traverse of Species I in the reply filed on 7/20/2005 is acknowledged. The traversal is on the ground(s) that the Examiner did not give reasons for holding that Species I and Species II are patentably distinct in the Office Action of 3/21/2005. This is not found persuasive because, as explained in the aforementioned Office Action, Species I is drawn to a variable focal length lens assembly comprising multiple switchable optical elements, whereas Species II is drawn to a method of making a single switchable element comprising the steps of bringing a variable thickness die substrate in contact with a soft layer having a lens function. Species I is patentably distinct from Species II because it is drawn to an arrangement of multiple switchable elements with specific operational characteristics to provide a composite lens with variable focal length.

The requirement is still deemed proper and is therefore made FINAL.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 40 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 40 recites in line 8 that “each second state focal length is twice as large another second state focal length”. The above is not clear, and for examination purposes it will be taken that all the second state focal lengths are equal to each other and twice as large than a smallest second state focal length.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4, 6-9, 14-17, 21-24, 27-29, 35-37, 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishimoto (GB 2171535).

Regarding claim 1, Nishimoto discloses a variable focal length lens system (Fig. 2) for providing an optical system having a plurality of selectable focal powers ranging between  $f_1$  and  $f_2$ , comprising:

a first switchable element (2, 3) capable of being switched between a first element first state (when the switch 5 is open) and a first element second state (when the switch 5 is closed); and a second switchable element 6 capable of being switched between a second element first state (depending on the state of variable voltage source 7) and a second element second state (depending on another state of variable voltage source 7);

wherein the first and second switchable elements are in optical communication with each other, such that each of them may contribute to a cumulative focal power;

wherein there are four distinct pairs of states of the two elements [i.e., (switch 5 open, 1<sup>st</sup> state of voltage source 7), (switch 5 closed, 1<sup>st</sup> state of voltage source 7), (switch 5 open, 2<sup>nd</sup> state of voltage source 7), (switch 5 closed, 2<sup>nd</sup> state of voltage source 7)], each pair producing a different value for the cumulative focal power of the lens assembly (lines 79-90, p. 2).

It is noted that Nishimoto discloses that the second variable lens 6 has a focal length range which is equal to or larger than that of the first switchable lens (2, 3), which implies that there is a value for the voltage for which the focal length in a first state of the first switchable lens is equal to the focal length in a first state of the second switchable lens 6 (see Abstract).

Regarding claims 2, 4, 9, 28, the switchable lens 6 may be a liquid crystal lens (line s34-37, p. 2).

Regarding claim 6, the lens system further includes non-switchable elements such as polarizing plate 1 and birefringent lens 3 (Fig. 2 and lines 77-80, p. 1).

Regarding claim 7, the variable focal length system of Nishimoto may include a stack of N switchable elements, N > 2, see Fig. 5.

Regarding claim 8, one of the switchable elements is an electro-optic lens (lines 50-52, p. 2).

Regarding claims 14, 21, the lens assembly includes a controller, including a microcomputer, for activating the switchable elements (lines 7-13, p. 3).

Regarding claims 15, 27, variable focal length lens 6 is continuously tuned within the range of its focal length by continuously varying the voltage source 7 (lines 83-87, p. 2).

Regarding claim 16, the lens system further includes a light source providing light beam incident on the switchable element 2.

Regarding claim 17, the light is received and transmitted by the first and second switchable elements 2 and 6, respectively, and is modified (i.e., focused) according to the selected focal powers of the two switchable elements.

Regarding claim 22, the control signal controls the state (ON or OFF) of the n switchable elements, thus it contains a number of bits corresponding to the number of elements being controlled (lines 120-122, p. 2).

Regarding claims 23-24, the control signal is an electrical signal in the form of voltage appropriate to set the focal length of switchable element 6 to the desired state.

Regarding claims 29, 37, the variable focal length lens assembly of Nishimoto may have n switchable elements ( $2_1, 3_1 \dots 2_n, 3_n$ ), where n is equal or greater than 2, each of the switchable elements being switched between discrete first and second states (see Fig. 5).

Regarding claims 35-36, the n switchable elements are stacked coaxially, and approximately in contact (see Fig. 5).

Regarding claim 41, depending on the voltage applied across crystal members 8, 9, the boundary between 11 and 12 may be “flat” (see Fig. 4, and lines 66-71, p. 2), resulting in the element not focusing at all, or equivalently having a focal length approximately infinite.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-13, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimoto (GB 2171535).

Nishimoto discloses all the limitations of the above claims except for teaching that the variable focal length lens system may be used in optical systems such as telescopes, cameras, projectors, or microscopes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the variable focal length lens system of Nishimoto in one of the above mentioned applications, since Official Notice is taken that the above optical systems routinely utilize variable focal length lenses, for providing increased flexibility to the user. A lens system like the one disclosed by Nishimoto is advantageous because of its lack of moving mechanical parts in varying the focal length of the composite system. For illustration purposes only, Ogata (US 5,920,427, Fig. 2) discloses an optical camera system having variable focal length capability.

Claims 3, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimoto (GB 2171535) in view of Popovich (US 6,356,366).

Nishimoto discloses all the limitations of the above claims except for teaching that some of the switchable elements are switchable holographic optical elements, and in particular stacked thin holographic lenses. Popovich discloses a variable focal length lens assembly (Fig. 1), comprising a stack of three switchable thin holographic optical elements 26, 28, 30. Each holographic element can either focus incident light or allow light to pass through without alteration depending on voltage that is applied at its two surfaces. By selectively activating one

of the three holographic elements, the lens assembly of Fig. 1 may have three different focal lengths (lines 19-24, col. 3, 14-29, col. 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a switchable holographic optical element in place of the switchable element 2 in Nishimoto's system, since holographic lenses are easier to make and are less bulky than electro-optic crystals.

***Allowable Subject Matter***

Claim 40 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 30-34, 38-39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 30-34, 38-40 are allowable over the prior art of record for at least the reason that even though the prior art discloses a variable lens assembly comprising a multitude of switchable elements, the prior art fails to teach or reasonably suggest a digital focus lens system having a plurality of selectable focal powers, wherein the N switchable elements have the claimed focal lengths, as set forth by the claimed combination.

***Response to Arguments***

Applicant's arguments with respect to claim 5 have been considered but are moot in view of the new ground(s) of rejection.

Regarding claim 1 and the (new) limitation that the first state focal length is the same for the two switchable elements, Nishimoto discloses a range for the focal lengths that covers the above limitation.

Regarding claim 21 and the argument that Nishimoto does not teach the use of a control word for controlling the switchable elements, the Examiner respectfully disagrees and notes that there must be unique correspondence between a control signal and the intended element to be controlled, and this is achieved by a control signal/word.

*Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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August 9, 2005



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